



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,202	09/03/2003	Jae-Deog Cho	1293.1953	1755

21171 7590 12/14/2004

STAAS & HALSEY LLP
SUITE 700
1201 NEW YORK AVENUE, N.W.
WASHINGTON, DC 20005

EXAMINER

NEGRON, DANIEL L

ART UNIT	PAPER NUMBER
----------	--------------

2651

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/653,202

Applicant(s)

CHO, JAE-DEOG

Examiner

Daniell L. Negrón

Art Unit

2651

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 3-5, 9-12, and 16-21 are rejected under 35 U.S.C. 102(b) as being anticipated by Jen et al U.S. Patent No. 6,405,277.

Regarding claims 10 and 12, Jen et al disclose an apparatus for controlling a disk drive (34) comprising a buffer (74) to store data inputted and outputted from a host computer (i.e. external system, column 6, lines 2-8), a thermal sensor (80) to detect a temperature around the disk drive (column 6, lines 35-42), and a controller (i.e. processor, 72) to enable a write verify function when the temperature detected by the thermal sensor is below a threshold temperature (column 7, lines 38-48), detect for a presence of a recording error by reading and comparing data recorded in a data area sector of a disk with the data stored in the buffer and seek a reserved track (i.e. reserved spare space) of the disk and generate an instruction to record in a reserved sector of the disk when the recording error (i.e. hard error) is detected (column 8, lines 2-14).

Regarding claim 11, Jen et al disclose an apparatus for controlling a disk drive wherein the controller disables the write verify function if the temperature around the

Art Unit: 2651

disk drive is greater than the threshold temperature (i.e. between the “low limit” and the “low threshold”) after which the controller records the data in a data area of the disk (column 7, lines 34-48).

Furthermore, Jen et al disclose a disk drive which operates in various writing modes including a “cold-write” and “normal-write” operations. The “cold-write” operation is executed when a detected temperature is below a “low threshold”, in this operation, data is written to a reserved sector of the disk. The “normal-write” is executed in a case when the temperature is above the “low threshold”. Therefore it is considered that the limitations are met by the reference.

Regarding claims 1, 3, and 5, method claims 1, 3, and 5 are drawn to the method of using the corresponding apparatus claimed in claims 10-12. Therefore method claims 1, 3, and 5 correspond to apparatus claims 10-12 and are rejected for the same reasons of anticipation as used above.

Regarding claim 4, Jen et al disclose a method for recording data wherein the detecting of the recording error further comprises comparing data stored in a buffer with the read recorded data. The use of a buffer to compare data is considered inherent in the reference since Jen et al discloses that the buffer (74) is used for storing data transferred between the disk drive (34) and the external system (76) (column 6, lines 2-11) and such a buffer would be required in order to temporarily store the data to be compared (i.e. verified) with the read recorded data.

Regarding claim 9, Jen et al disclose a method of recording data with all the limitations of claim 1, wherein the threshold temperature (i.e. low limit) is based on when

Art Unit: 2651

recording performance begins to drop, in consideration of a contraction rate of a pole tip, or a coercive force of the disk (column 3, lines 5-12).

Furthermore, the disclosure of Jen et al shows that a normal operation of a disk drive is executed effectively under specific temperatures. It is shown by Jen et al that temperatures outside a predetermined range affect the coercivity of the disk and therefore affect the performance of the writing operation of the disk drive (column 1, lines 29-36), it is therefore considered that Jen et al determines a threshold temperature based on recording performance and coercivity of the disk.

Regarding claims 16 and 17, method claims 16 and 17 are drawn to the method of using the corresponding apparatus claimed in claims 10 and 11. Therefore method claims 16 and 17 correspond to apparatus claims 10 and 11 and are rejected for the same reasons of anticipation as used above.

Regarding claims 18-21, Jen et al disclose a medium (34) comprising computer readable code (i.e. computer programming code) controlling at least a computer (i.e. processor) to implement the method of claims 1, 5, 16, and 17 discussed above (Fig. 7, column 6, lines 42-48).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Art Unit: 2651

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jen et al U.S. Patent No. 6,405,277 in view of Kittilson et al U.S. Patent No. 6,078,452.

Regarding claim 2, Jen et al disclose an apparatus for controlling a disk drive comprising all the limitations of claim 1 as discussed above but fail to show a method wherein the write verify function repeats the enabling of the write verify function, recording of data, reading of the recorded data, and detecting of the recording error for a predetermined time.

However, Kittilson et al disclose a method for detecting recording errors and attempting to recover data recorded on defective locations on the disc. Furthermore, Kittilson et al show that write verify retries are executed for the purpose of recovering data recorded on a location of the disc, after a predetermined amount of retries, the data recorded thereon is relocated to a alternate reserved area of the disc (column 1, line 63 through column 2, line 8, and column 8, lines 40-56).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the error detecting apparatus disclosed by Jen et al with the teachings of Kittilson et al in order to determine whether detected recording errors are recoverable or permanent and to use this determination to decide whether to record data on a reserved area of the disc for the purpose of enabling reliable storage of data.

6. Claim 6, 8, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jen et al U.S. Patent No. 6,405,277 in view of Yasuda et al U.S. Patent No. 5,357,381.

Regarding claims 13 and 15, Jen et al disclose an apparatus for controlling a disk drive comprising all the limitations of claim 10 as discussed above but fail to show an apparatus wherein the reserved sector of the disk is in an inner radial reserved area of the disc separate from the data area of the disk.

However Yasuda et al disclose an apparatus for detecting errors in data recorded on a disk wherein data is recorded in a reserved sector (i.e. alternate area) in an inner radial area (i.e. inner side) when a data error is detected in an identification (ID) area of the sector for the purpose of recording additional data related to the data error in an area other than the original location of the data (Fig. 2, column 1, lines 30-51, and column 2, lines 5-11).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the error detecting apparatus disclosed by Jen et al with the teachings of Yasuda et al in order to improve the access speed of data recorded on a defective area of a disk medium.

Regarding claims 6 and 8, method claims 6 and 8 are drawn to the method of using the corresponding apparatus claimed in claims 13 and 15. Therefore method claims 6 and 8 correspond to apparatus claims 13 and 15 and are rejected for the same reasons of obviousness as used above.

7. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jen et al U.S. Patent No. 6,405,277 in view of Nguyen U.S. Patent No. 6,611,397.

Regarding claim 14, Jen et al disclose an apparatus for controlling a disk drive comprising all the limitations of claim 10 as discussed above but fails to show wherein

Art Unit: 2651

the recording error is detected based at least on an increased absolute value of a position error signal.

However, Nguyen discloses an apparatus for detecting errors in servo burst patterns for the purpose of determining whether a defect is present on the disc surface (column 6, line 62 through column 7, line 4). Furthermore, Nguyen discloses that a detected position error signal value that exceeds a threshold may possibly be an indication of an anomaly on the disc that would prevent proper recording (column 2, lines 26-53).

Therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine the error detecting apparatus disclosed by Jen et al with the teachings of Nguyen in order to use position error signals to detect recording errors on the disc since such errors would cause a location on a disc to be unfit for recording.

Regarding claim 7, method claim 7 is drawn to the method of using the corresponding apparatus claimed in claim 14. Therefore method claim 7 corresponds to apparatus claim 14 and is rejected for the same reasons of obviousness as used above.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniell L. Negrón whose telephone number is 703-305-6985. The examiner can normally be reached on Monday-Friday (8:30-6:00) Alternate Fridays off.

Art Unit: 2651

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh N. Tran can be reached on 703-305-4040. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DLN 
December 1, 2004


SINH TRAN
PRIMARY EXAMINER